

APPENDIX I.
TECHNICAL NOTES FOR DEVELOPING GRIDDED LAND USE AT 2 AND 4
KILOMETER RESOLUTION

12/20/99

My method for getting the landuse file ready for uam-aero

The grid, gwalu_grd is a 30m grid from agrc of 1997 parcel based landuse done for qget. A lot of it does not function perfectly for uam needs so I am going to combine it with GIRAS data to get the lu categories I need. The main thing I will get out of this grid will be the urban residential and commercial, and the agricultural areas.

The eleven lu categories used in uam for the creation of the terrain file via CRETER are the same categories used in uam-aero for their land use file. One also uses CRETER to create a terrain file for aero, but unlike uam, aero also uses an explicit land use file. So that is what I am setting about to create.

Current location: /trinidad/uam_aero/ws.uamaero/ws.lu

Arc: additem GWALU_GRD.vat GWALU_GRD.vat lucode 2 3 i

Arc: tables

Enter Command: sel GWALU_GRD.vat

28 Records Selected.

Enter Command: list

Record	VALUE	COUNT DESCRIPTION	LUCODE
1	0	10565809 No Data	0
2	1	3823306 USFS	0
3	2	2531663 BLM	0
4	3	622098 State of Utah	0
5	6	356990 Military	0
6	7	1058 National Park/Monument	0
7	8	237209 Utah State Parks and Rec.	0
8	9	487359 State Wildlife Management	0
9	11	115272 National Wildlife refuge	0
10	12	429719 Wilderness	0
11	13	97515 Federal Grasslands	0
12	39	3493571 Water Bodies	0
13	40	1644 Intermittent Water Bodies	0
14	101	929568 R1 - Single Family	0
15	102	12522 R2 - 2-4 Units	0
16	103	17232 R3 - Multi-family	0
17	104	10544 R4 - Mobile Homes	0
18	105	555 R5 - Group Quarters	0

19	106	99908 C1 - Retail	0
20	107	110566 C2 - Industrial	0
21	108	8224 C3 - Warehouse	0
22	109	2720 C4 - Office	0

Continue?

23	110	207189 C5 - Special Purpose	0
24	111	474138 Exempt	0
25	112	939118 Agriculture	0
26	113	1281149 Vacant	0
27	119	28969 Parks / Open Space	0
28	212	865951 Irrigated Cropland	0

Enter Command: resel value > 100 and value < 111

10 Records Selected.

Enter Command: calc lucode = 1

Enter Command: asel

Enter Command: resel value = 212 or value = 112

Enter Command: calc lucode = 2

Enter Command: asel

Enter Command: resel value = 13

Enter Command: calc lucode = 3

Enter Command: asel

Enter Command: resel value = 119

Enter Command: calc lucode = 3

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I now have urban, ag, and range defined. Next step is to break them out as separate grids.

Grid: ag30_grd = test(GWALU_GRD, 'lucode = 2')

Grid: urb30_grd = test(GWALU_GRD, 'lucode = 1')

Grid: rng30_grd = test(GWALU_GRD, 'lucode = 3')

The test function puts a 1 in the cell that has the preferred land use and a 0 in all others.

Now I want to get VALUE to represent the number of sq. meters

Grid: urb_sqm_grd = (URB30_GRD * 900)

Grid: ag_sqm_grd = (AG30_GRD * 900)

Grid: rng_sqm_grd = (RNG30_GRD * 900)

Do a QA to see if things are as they should be

Grid: list AG30_GRD.vat

Record VALUE COUNT

1 0 25946497

```
2      1 1805069
Grid: list AG_SQM_GRD.vat
Record    VALUE   COUNT
1      0 25946497
2     900 1805069
```

Looks good!

Now create a value grid

```
Grid: dom2k_grd = polygrid(../aero_2km,#,#,#,2000)
```

Now see if I can get the values into a 2km resolution.

```
Grid: setcell minof
```

```
Grid: ag2km_grd = zonalsum(DOM2K_GRD,AG_SQM_GRD)
```

```
Grid: ag2km_rsmp = resample(ag2km_grd,2000)
```

Do some QA

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Can't seem to get the QA to do what I want in terms of comparing my resampled grid to the original 30 meter grid. At this point I think that is ok. I am going to go on with it and see if I can do some comparisons when I get my final coverage.

Repeat the process above to get 2km grids for urban and range.

```
Grid: setcell minof
```

```
Grid: urb2km_grd = zonalsum(DOM2K_GRD,URB_SQM_GRD)
```

```
Grid: urb2km_rsmp = resample(urb2km_grd,2000)
```

```
Grid: rng2km_grd = zonalsum(DOM2K_GRD,RNG_SQM_GRD)
```

```
Grid: rng2km_rsmp = resample(rng2km_grd,2000)
```

```
Grid: RNG2KM_int = int(RNG2KM_RSMP)
```

```
Grid: URB2KM_int = int(URB2KM_RSMP)
```

Value range for /trinidad/uam_aero/ws.uamaero/ws.lu/urb2km_int exceeds 100000
and number of unique values exceeds 500.

Please use BUILDVAT if a VAT is required.

```
Grid: buildvat URB2KM_int
```

```
Grid: kill AG2KM_INT all
```

Killed AG2KM_INT with the ALL option

```
Grid: AG2KM_INT = int(AG2KM_RSMP)
```

Value range for /trinidad/uam_aero/ws.uamaero/ws.lu/ag2km_int exceeds 100000
and number of unique values exceeds 500.

Please use BUILDVAT if a VAT is required.

```
Grid: buildvat AG2KM_int
```

Turn these into coverages

```
Grid: AG2KM_cov = gridpoly(AG2KM_INT)
```

```
Grid: RNG2KM_cov = gridpoly(RNG2KM_INT)
```

Grid: URB2KM_cov = gridpoly(URB2KM_INT)

Now do some QA in ap and see if things look right
QA looks good on these grids. I compared the final covs with the urb2km_grd series of 30 meter grids and they match well.

Step 2 in creating the uam-aero landuse file

Get rid of the intemeadiate grids created above. Can always recreate them if needed.

Prepare the 3 lu covs to integrate lu items into 1 coverage.

Arc: tables

Enter Command: sel AG2KM_COV.pat

Enter Command: alter grid-code

Item Name: ag

Do the same for urban and range

Create the initial lu coverage

Arc: copy ../aero_2km ./aero_2km

Arc: identity AERO_2KM AG2KM_COV lu1_cov

Arc: identity lu1_cov RNG2KM_COV lu2_cov

Arc: identity lu2_cov URB2KM_COV lu3_cov

Drop a few items

Now deal with the giras landuse and get it identified into the final landuse covs.

Arc: additem GIRAS_COV.pat GIRAS_COV.pat gc 2 2 i

Arc: clip GIRAS_COV AERO_2KM giras_clp

Enter Command: sel giras_clp.pat

Enter Command: resel lucode > 10 and lucode < 20

Enter Command: calc gc = 1

Enter Command: sel

Arc: polygrid giras_clp URBG_GRD gc

Converting polygons from giras_clp to grid URBG_GRD

Cell Size (square cell): 100

Convert the Entire Coverage? (Y/N): y

Number of Rows = 2641

Number of Columns = 1940

Enter Command: sel giras_clp.pat

Enter Command: calc gc = 0

Enter Command: resel lucode > 20 and lucode < 30

657 Records Selected.

Enter Command: calc gc = 1

Enter Command: sel

Arc: polygrid giras_clp agg_grd gc

Converting polygons from giras_clp to grid agg_grd

Cell Size (square cell): 100

Grid: asel ws.work_covs/giras_clp poly
Grid: calc ws.work_covs/giras_clp poly gc = 0
Grid: resel ws.work_covs/giras_clp poly lucode > 30 and lucode < 40
WS.WORK_COVS/GIRAS_CLP polys : 2245 of 8163 selected.
Grid: calc ws.work_covs/giras_clp poly gc = 1
Grid: rngg_grd = polygrid(ws.work_covs/giras_clp,gc,#,#,100)

Grid: asel giras_clp poly
GIRAS_CLP polys : 8163 of 8163 selected.
Grid: calc giras_clp poly gc = 0
Grid: resel giras_clp poly lucode = 41
GIRAS_CLP polys : 579 of 8163 selected.
Grid: calc giras_clp poly gc = 1
Grid: decidg_grd = polygrid(giras_clp,gc,#,#,100)

Grid: asel giras_clp poly
GIRAS_CLP polys : 8163 of 8163 selected.
Grid: calc giras_clp poly gc = 0
Grid: resel giras_clp poly lucode = 42
GIRAS_CLP polys : 883 of 8163 selected.
Grid: calc giras_clp poly gc = 1
Grid: evgrg_grd = polygrid(giras_clp,gc,#,#,100)

Grid: asel giras_clp poly
GIRAS_CLP polys : 8163 of 8163 selected.
Grid: calc giras_clp poly gc = 0
Grid: resel giras_clp poly lucode = 43
GIRAS_CLP polys : 463 of 8163 selected.
Grid: calc giras_clp poly gc = 1
Grid: mixg_grd = polygrid(giras_clp,gc,#,#,100)

Grid: asel giras_clp poly
GIRAS_CLP polys : 8163 of 8163 selected.
Grid: calc giras_clp poly gc = 0
Grid: resel giras_clp poly lucode > 50 and lucode < 60
GIRAS_CLP polys : 198 of 8163 selected.
Grid: calc giras_clp poly gc = 1
Grid: watg_grd = polygrid(giras_clp,gc,#,#,100)

Grid: asel giras_clp poly
GIRAS_CLP polys : 8163 of 8163 selected.
Grid: calc giras_clp poly gc = 0
Grid: resel giras_clp poly lucode = 62
GIRAS_CLP polys : 114 of 8163 selected.

```
Grid: calc giras_clp poly gc = 1
Grid: wetg_grd = polygrid(giras_clp,gc,#,#,100)
```

```
Grid: asel giras_clp poly
GIRAS_CLP polys : 8163 of 8163 selected.
Grid: calc giras_clp poly gc = 0
Grid: resel giras_clp poly lucode > 70 and lucode < 80
GIRAS_CLP polys : 402 of 8163 selected.
Grid: calc giras_clp poly gc = 1
Grid: barg_grd = polygrid(giras_clp,gc,#,#,100)
```

```
Grid: asel giras_clp poly
GIRAS_CLP polys : 8163 of 8163 selected.
Grid: calc giras_clp poly gc = 0
Grid: resel giras_clp poly lucode > 70 and lucode < 80
GIRAS_CLP polys : 402 of 8163 selected.
Grid: calc giras_clp poly gc = 1
Grid: barg_grd = polygrid(giras_clp,gc,#,#,100)
```

Now go through the process I went through with the agrc grid.

First get the values in sq meters

```
Grid: AGG_GRD2 = (AGG_GRD * 10000)
Grid: BARG_GRD2 = (BARG_GRD * 10000)
Grid: DECIDG_GRD2 = (DECIDG_GRD * 10000)
Grid: EVGRG_GRD2 = (EVGRG_GRD * 10000)
Grid: MIXG_GRD2 = (MIXG_GRD * 10000)
Grid: RKYG_GRD2 = (RKYG_GRD * 10000)
Grid: URBG_GRD2 = (URBG_GRD * 10000)
Grid: WATG_GRD2 = (WATG_GRD * 10000)
Grid: WETG_GRD2 = (WETG_GRD * 10000)
Grid: rmgg_grd2 = (rmgg_grd * 10000)
```

Now sum up the values

```
Grid: AGG_GRD3 = zonalsum(DOM2K_GRD,AGG_GRD2)
Grid: BARG_GRD3 = zonalsum(DOM2K_GRD,BARG_GRD2)
Grid: DECIDG_GRD3 = zonalsum(DOM2K_GRD,DECIDG_GRD2)
Grid: EVGRG_GRD3 = zonalsum(DOM2K_GRD,EVGRG_GRD2)
Grid: MIXG_GRD3 = zonalsum(DOM2K_GRD,MIXG_GRD2)
Grid: RKYG_GRD3 = zonalsum(DOM2K_GRD,RKYG_GRD2)
Grid: URBG_GRD3 = zonalsum(DOM2K_GRD,URBG_GRD2)
Grid: WATG_GRD3 = zonalsum(DOM2K_GRD,WATG_GRD2)
Grid: WETG_GRD3 = zonalsum(DOM2K_GRD,WETG_GRD2)
Grid: rmgg_grd3 = zonalsum(DOM2K_GRD,rmgg_grd2)
```

Now resample to a 2km grid cell

```
Grid: AGG_GRD4 = resample(AGG_GRD3,2000)
Grid: BARG_GRD4 = resample(BARG_GRD3,2000)
Grid: DECIDG_GRD4 = resample(DECIDG_GRD3,2000)
Grid: EVGRG_GRD4 = resample(EVGRG_GRD3,2000)
Grid: MIXG_GRD4 = resample(MIXG_GRD3,2000)
Grid: RKYG_GRD4 = resample(RKYG_GRD3,2000)
Grid: URBG_GRD4 = resample(URBG_GRD3,2000)
Grid: WATG_GRD4 = resample(WATG_GRD3,2000)
Grid: WETG_GRD4 = resample(WETG_GRD3,2000)
Grid: rnng_grd4 = resample(rnng_grd3,2000)
```

Create integer grids

```
Grid: AGG_GRD5 = int(AGG_GRD4)
Grid: BARG_GRD5 = int(BARG_GRD4)
Grid: DECIDG_GRD5 = int(DECIDG_GRD4)
Grid: EVGRG_GRD5 = int(EVGRG_GRD4)
Grid: MIXG_GRD5 = int(MIXG_GRD4)
Grid: RKYG_GRD5 = int(RKYG_GRD4)
Grid: URBG_GRD5 = int(URBG_GRD4)
Grid: WATG_GRD5 = int(WATG_GRD4)
Grid: WETG_GRD5 = int(WETG_GRD4)
Grid: rnng_grd5 = int(rnng_grd4)
```

Now turn these into coverages

```
Grid: AGG_cov = gridpoly(AGG_GRD5)
Grid: BARG_cov = gridpoly(BARG_GRD5)
Grid: DECIDG_cov = gridpoly(DECIDG_GRD5)
Grid: EVGRG_cov = gridpoly(EVGRG_GRD5)
Grid: MIXG_cov = gridpoly(MIXG_GRD5)
Grid: RKYG_cov = gridpoly(RKYG_GRD5)
Grid: URBG_cov = gridpoly(URBG_GRD5)
Grid: WATG_cov = gridpoly(WATG_GRD5)
Grid: WETG_cov = gridpoly(WETG_GRD5)
Grid: rnng_cov = gridpoly(rnng_grd5)
```

Get rid of all these grids

Alter the item names on all thes new coverages so that they can be identitied with lu3_cov

```
Enter Command: sel AGG_COV.PAT
Enter Command: alter GRID-CODE
Item Name: agg
```

Enter Command: sel RNGG_COV.PAT

Enter Command: alter grid-code

Item Name: rgg

Enter Command: sel BARG_COV.PAT

Enter Command: alter grid-code

Item Name: barg

Enter Command: sel DECIDG_COV.PAT

Enter Command: alter grid-code

Item Name: decidg

Enter Command: sel EVGRG_COV.PAT

Enter Command: alter grid-code

Item Name: EVGRG

Enter Command: sel MIXG_COV.PAT

Enter Command: alter grid-code

Item Name: MIXG

Enter Command: sel RKYG_COV.PAT

Enter Command: alter grid-code

Item Name: RKYG

Enter Command: sel URBG_COV.PAT

Enter Command: alter grid-code

Item Name: URBG

Enter Command: sel WATG_COV.PAT

Enter Command: alter grid-code

Item Name: WATG

Enter Command: sel WETG_COV.PAT

Enter Command: alter grid-code

Item Name: WETG

Now Identity up to get a semi-final landuse coverage.

Arc: identity LU3_COV AGG_COV lu4_cov

Arc: identity lu4_cov BARG_COV lu5_cov

Arc: identity lu5_cov DECIDG_COV lu6_cov

Arc: identity lu6_cov EVGRG_COV lu7_cov

Arc: identity lu7_cov MIXG_COV lu8_cov

Arc: identity lu8_cov RKYG_COV lu9_co

Arc: identity lu9_co RNGG_COV lu10_cov

```
Arc: identity lu10_cov URBG_COV lu11_cov  
Arc: identity lu11_cov WATG_COV lu12_cov  
Arc: identity lu12_cov WETG_COV lu13_cov
```

Now, drop the unneeded items and kill all of the intermediate lu covs.

&&&&*****&&&&

Add the final land use items to lu13_cov and then create an aml to give a final land use code to each cell.

```
Arc: copy LU13_COV aero_lu_cov
```

As I look at this land use coverage the numbers are not terribly clean but that is because I am working with different data sets. I should be able to recalculate things and then compare the final lu cov with the original giras coverage and agr grid to see how they match up.

The plan for the aml is to process it one cell at a time . Call the aml "calclu.aml".

1st create final lu items
2nd calc -9999 = 0
check if every lu items is 0
 if so go to next cell
if not do max stats on each item

1/3/00

Have an aml created, calclu2.aml, with the help of ESRI, to process the land use coverage. The basic documentation of how the final aero land use for each grid cell gets calculated is contained within the aml. However, here are a few added comments.

As mentioned above, lu13_cov is the final concoction of qget and usgs land use. Any modifications to that data set will always be done by copying that coverage and then working on the derived coverage. EXCEPT that I am going to change the -9999 values in lu13_cov to 0.

In order to get the best use out of the agr/qget data I am going to recalculate any of the ag and urb items so that if the usgs agricultural is larger than the agr urban or the usgs urban is larger than the agr agricultural then the agr items will be recalculated to be 10 higher than the usgs so that the grid will be properly classed based on the latest, highest resolution data. This will be commented in the aml.

AERO_LU_COV IS NOW DONE, LAND USE FOR AERO NOW EXISTS.

2/4/00

Things have changed in the last month in terms of the domain size. It is much smaller. So, now I need to clip this coverage and then redo the cell-id.

Arc: clip AERO_LU_COV ..//AERO3_2KM AERO_3_lu
Bring over a coverage to get the proper cell-id into the clipped cov.
Arc: copy ..//aero3_2km ./aero3_2km

Put the old coverages of the larger domain into the archive workspace, ws.work_covs.

Did the copying now kill the covs from this ws.

Arc: killem AERO_2KM AERO_LU_COV LU13_COV
Then tar up the archive workspace.

Arc: dropitem AERO_3_LU.pat AERO_3_LU.pat CELL-ID

Arc: identity AERO_3_LU AERO3_2KM AERO_3_LU2

Now I have the correct cell-id in the coverage. Just drop the unnecessary items and rename the coverage back to aero_3_lu.

Arc: tables

Enter Command: sel AERO_3_LU.pat

Enter Command: unload aero.lu cell-id x-coord y-coord aero-lu

Now create a map comp and a gif of the land use.

Add an item for the color coding, calc the item, then create the aml to create the map.

2/7/00 Note to myself

I see when I create the map that for some reason in the wetlands and on the tip of Promontory Pt. There is urban land I am going to go into AERO_3_LU and change these to wetlands and range respectively.

Found some more land use categories that need to be changed, mainly in the GSL. Will change those and then visually check each of the other categories to see if I can spot any other problems.

11/21/00

Redoing the uam-aero domain to a 4 km resolution rather than 2 km. Will now use the documentation in notes.sdw to create a set of procedures and possibly amls to create a 4 km land use data set.

Actually, have another idea: disaggregate this data in way that is defensibly logical. What I will do is:

- ① polygrid a bunch of times, 1 for each lu item
- ① blocksum each lu at 4 km
- ① resample to 4km
- ① convert back to polys
- ① identity all of these back up into 1 4km coverage

@run that cursor aml on the coverage to get the final lu

Current location

Workspace: /TRINIDAD/UAM_AERO/WS.UAMAERO/WS.LU

Arc: copy AERO_3_LU AERO_3_LU2

Arc: polygrid AERO_3_LU2 ag_grd ag

Converting polygons from AERO_3_LU2 to grid ag_grd

Cell Size (square cell): 2000

Convert the Entire Coverage? (Y/N): y

Number of Rows = 113

Number of Columns = 67

Arc: polygrid AERO_3_LU2 RNG_grd RNG

Arc: polygrid AERO_3_LU2 URB_grd urb

Arc: polygrid AERO_3_LU2 AGG_grd agg

Arc: polygrid AERO_3_LU2 DECIDG_grd DECIDG

Arc: polygrid AERO_3_LU2 EVGRG_grd EVGRG

Arc: polygrid AERO_3_LU2 MIXG_grd MIXG

Arc: polygrid AERO_3_LU2 RKYG_grd RKYG

Arc: polygrid AERO_3_LU2 RNNG_grd RNNG

Arc: polygrid AERO_3_LU2 URBG_grd URBG

Arc: polygrid AERO_3_LU2 WATG_grd WATg

Arc: polygrid AERO_3_LU2 WETG_grd WETG

Arc: polygrid AERO_3_LU2 BARG_grd BARG

Grid: buildvat AGG_GRD

Grid: buildvat URB_GRD

Grid: AGG_GRD4 = blocksum(AGG_GRD,rectangle,2,2)

Grid: AG_GRD4 = blocksum(AG_GRD,rectangle,2,2)

Grid: BARG_GRD4 = blocksum(BARG_GRD,rectangle,2,2)

Grid: DECIDG_GRD4 = blocksum(DECIDG_GRD,rectangle,2,2)

Grid: EVGRG_GRD4 = blocksum(EVGRG_GRD,rectangle,2,2)

Grid: MIXG_GRD4 = blocksum(MIXG_GRD,rectangle,2,2)

Grid: RKYG_GRD4 = blocksum(RKYG_GRD,rectangle,2,2)

Grid: RNNG_GRD4 = blocksum(RNNG_GRD,rectangle,2,2)

Grid: RNG_GRD4 = blocksum(RNG_GRD,rectangle,2,2)

Grid: URBG_GRD4 = blocksum(URBG_GRD,rectangle,2,2)

Grid: URB_GRD4 = blocksum(URB_GRD,rectangle,2,2)

Grid: WATG_GRD4 = blocksum(WATG_GRD,rectangle,2,2)

Grid: WETG_GRD4 = blocksum(WETG_GRD,rectangle,2,2)

Grid: setwindow minof

```
Grid: AGG_GRD4a = resample(AGG_GRD4,4000)
Grid: AG_GRD4a = resample(AG_GRD4,4000)
Grid: BARG_GRD4a = resample(BARG_GRD4,4000)
Grid: DECIDG_GRD4a = resample(DECIDG_GRD4,4000)
Grid: EVGRG_GRD4a = resample(EVGRG_GRD4,4000)
Grid: MIXG_GRD4a = resample(MIXG_GRD4,4000)
Grid: RKYG_GRD4a = resample(RKYG_GRD4,4000)
Grid: RNG_GRD4a = resample(RNG_GRD4,4000)
Grid: URBG_GRD4a = resample(URBG_GRD4,4000)
Grid: URB_GRD4a = resample(URB_GRD4,4000)
Grid: WATG_GRD4a = resample(WATG_GRD4,4000)
Grid: WETG_GRD4a = resample(WETG_GRD4,4000)
```

Turn these back into polys

```
Arc: gridpoly AGG_GRD4A agg_cov
Arc: gridpoly AG_GRD4A ag_cov
Arc: gridpoly BARG_GRD4A barg_cov
Arc: gridpoly DECIDG_GRD4A DECIDG_cov
Arc: gridpoly EVGRG_GRD4A EVGRG_cov
Arc: gridpoly MIXG_GRD4A MIXG_cov
Arc: gridpoly RKYG_GRD4A RKYG_cov
Arc: gridpoly RNGG_GRD4A RNGG_cov
Arc: gridpoly RNG_GRD4A RNG_cov
Arc: gridpoly URBG_GRD4A URBG_cov
Arc: gridpoly URB_GRD4A URB_cov
Arc: gridpoly WATG_GRD4A WATG_cov
Arc: gridpoly WETG_GRD4A WETG_cov
```

Now alter the grid-code to make them unique.

```
Tables: sel AGG_COV.PAT
611 Records Selected.
Tables: alter grid-code
COLUMN ITEM NAME      WIDTH OUTPUT TYPE N.DEC ALTERNATE NAME
  17 GRID-CODE        4   8   B   -
Item Name: agg
Tables: sel AG_COV.PAT
585 Records Selected.
Tables: alter grid-code
COLUMN ITEM NAME      WIDTH OUTPUT TYPE N.DEC ALTERNATE NAME
  17 GRID-CODE        4   8   B   -
Item Name: ag
Tables: sel BARG_COV.PAT
360 Records Selected.
```

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: barg

Tables: sel DECIDG_COV.PAT

321 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: decidg

Tables: sel EVGRG_COV.PAT

814 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: evrg

Tables: sel MIXG_COV.PAT

356 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: mixg

Tables: sel RKYG_COV.PAT

13 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: rkyg

Tables: sel RNGG_COV.PAT

1497 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: rnng

Tables: sel URBG_COV.PAT

448 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: urbg

Tables: sel URB_COV.PAT

484 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: urb

Tables: sel WATG_COV.PAT

310 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: watg

Tables: sel WETG_COV.PAT

283 Records Selected.

Tables: alter grid-code

COLUMN	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	ALTERNATE NAME
17	GRID-CODE	4	8	B	-	

Item Name: wetg

Now do the identities with the 4km coverage. First thing I have to do is finalize the 4km cov.

Workspace: /TRINIDAD/UAM_AERO/WS.UAMAERO

Arc: polygrid AERO_3_FIP fip2km_grd fips

Grid: setcell minof

Grid: fip4km_grd = resample(fip2km_grd,4000)

Results look ok in ap. Need to do some fine tuning at the county boundaries. Will do that in ae.

Arc: gridpoly FIP4KM_GRD FIP4KM_cov

Arc: identity AERO3_4KM FIP4KM_cov AERO3_4KM2

Fixed things in ae; converted grid-code to fips

Final cov is aero3_4km

Now back to identifying the lu covs.

Arc: identity ../AERO3_4KM AGG_COV lu4km1

Arc: identity lu4km1 AG_COV lu4km2

Arc: identity lu4km2 BARG_COV lu4km3

Arc: identity lu4km3 DECIDG_COV lu4km4

Arc: identity lu4km4 EVGRG_COV lu4km5

Arc: identity lu4km5 MIXG_COV lu4km6

Arc: identity lu4km6 RKYG_COV lu4km7

Arc: identity lu4km7 RNGG_COV lu4km8

Arc: identity lu4km8 RNG_COV lu4km

Arc: identity lu4km URBG_COV lu4km9

Arc: identity lu4km9 URB_COV lu4km10

Arc: identity lu4km10 WATG_COV lu4km11

Arc: identity lu4km11 WETG_COV lu4km12

Drop a whole bunch of items from lu4km12

Now I need to implement the cursor aml, but first I need to do a little checking on the final identitiied cov to make sure that the whole aml applies.

11/14/00

Things are finished now, with aero_lu_4km being the holder of the 4 km land use. This was finished off with calc3lu.aml. All of the intermeadiate coverages and grids have been deleted. If this needs to be redone, folow the steps in these notes all the way up to this point.

AML'S USED IN CREATION OF LAND USE DATABASE

LU-AREA.AML

```
/* 8/00
/*
/* This calculates the sq km of the land use categories needed for
/* area source ammonia surrogates
/*PB
/*
/*
&echo &on

&if [exists aero_3_lu2 -cover] &then
    kill aero_3_lu2 all
    copy aero_3_lu aero_3_lu2

&s cov = aero_3_lu2
    additem %cov%.pat %cov%.pat lul 4 12 f 3
    additem %cov%.pat %cov%.pat lu2 4 12 f 3
    additem %cov%.pat %cov%.pat lu3 4 12 f 3
    additem %cov%.pat %cov%.pat lu4 4 12 f 3
    additem %cov%.pat %cov%.pat lu5 4 12 f 3
    additem %cov%.pat %cov%.pat lu6 4 12 f 3
    additem %cov%.pat %cov%.pat lu7 4 12 f 3
    additem %cov%.pat %cov%.pat lu8 4 12 f 3
    additem %cov%.pat %cov%.pat lu9 4 12 f 3

ap

&s fill = fips
&s unit1 = [open %fill% 0 -read]

&do n = 1 &to 15
    &type %n%
    &s fip = [read %unit1% readstatus]
    clearsel

    &s lt = 0
    &do t = 1 &to 9
        &s lt = ( %lt% + 1 )
        resel %cov% poly aero-lu = %lt%
```

CALCLU2.AML

```
/*=====DISCLAIMER=====*
/*You may use, copy, modify, merge, distribute, alter, reproduce and/or
/*create derivative works of this AML for your own internal use. All
/*rights not specifically granted herein are reserved to ESRI.
/*
/*THIS AML IS PROVIDED "AS-IS" WITHOUT WARRANTY OF ANY KIND, EITHER
/*EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
/*WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE,
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/*
/*ESRI shall not be liable for any damages under any theory of law
/*related to your use of this AML, even if ESRI is advised of the
/*possibilities of such damage. This AML is not supported by ESRI.
***** */
/* This AML processes a coverage called LANDUSE so
/* The 4 references to LANDUSE need to be changed to
/* the appropriate coverage.

/* An item called HIGHEST has been added to the PAT to
/* hold the landuse type which is the largest for that cell.
/** HIGHEST will be changed to AERO-LU ** PB 1/2000
/** Coverage LANDUSE will be changed to AERO_LU_COV ** PB 1/00
/*=====
/*
/* calclu2.aml
/* Edited and adapted by P. Barickman
/* in the new millenium 1/2000
/*
/* Designed to put a land use uam-aero based land use classification
/* into each grid cell in the domain.
/*
/**Below are the land use categories being attributed
/*with this aml
/*
/* 1 = urban
/* 2 = agriculture
/* 3 = range
/* 4 = deciduous
/* 5 = conifer
/* 6 = mixed forest
/* 7 = water
/* 8 = barren
/* 9 = non forest wetland
/* 10 = mixed ag & range
/* 11 = rocky (low shrub)
/*
&echo &on
&if [exists aero_lu_cov -cover] &then
    kill aero_lu_cov all
copy lul3_cov aero_lu_cov
    ***** add the land use item
additem aero_lu_cov.pat aero_lu_cov.pat aero-lu 2 2 i
/*
```

```

ap
clearsel
***** recalc the -9999 values
resel aero_lu_cov poly ag = -9999
calc aero_lu_cov poly ag = 0
clearsel
resel aero_lu_cov poly rng = -9999
calc aero_lu_cov poly rng = 0
clearsel
resel aero_lu_cov poly urb = -9999
calc aero_lu_cov poly urb = 0
clearsel
resel aero_lu_cov poly agg = -9999
calc aero_lu_cov poly agg = 0
clearsel
resel aero_lu_cov poly barg = -9999
calc aero_lu_cov poly barg = 0
clearsel
resel aero_lu_cov poly decidg = -9999
calc aero_lu_cov poly decidg = 0
clearsel
resel aero_lu_cov poly evrg = -9999
calc aero_lu_cov poly evrg = 0
clearsel
resel aero_lu_cov poly mixg = -9999
calc aero_lu_cov poly mixg = 0
clearsel
resel aero_lu_cov poly rkyg = -9999
calc aero_lu_cov poly rkyg = 0
clearsel
resel aero_lu_cov poly rnrg = -9999
calc aero_lu_cov poly rnrg = 0
clearsel
resel aero_lu_cov poly urbg = -9999
calc aero_lu_cov poly urbg = 0
clearsel
resel aero_lu_cov poly watg = -9999
calc aero_lu_cov poly watg = 0
clearsel
resel aero_lu_cov poly wetg = -9999
calc aero_lu_cov poly wetg = 0
clearsel
/*
/* Recalculate the AG and Urb items to insure that
/* the AGR/QGET landuse takes precedence over the USGS landuse.
/* The point of the following recalculation is that if a cell has
/* predominantly urban or agricultural character, the classification
/* from usgs should not be allowed to override the class from agrc if
/* it turns out to have a larger sq meters of area.
/* For a cell in which neither of these classes dominate, a simple
/* recalculation of of ag or urb should not change its final
characterization.
/*
/* agriculture

resel aero_lu_cov poly ag > urb
resel aero_lu_cov poly urbg > ag

```

```

calc aero_lu_cov poly ag = urbg + 10
clearsel
/*
/* urban

resel aero_lu_cov poly urb > ag
resel aero_lu_cov poly agg > urb
calc aero_lu_cov poly urb = agg + 10
clearsel
/*
***** Use CURSORS *****
reselect aero_lu_cov polygon area > 0

cursor edit declare aero_lu_cov poly rw
cursor edit open

/* Sort all of the item values for each record,
/* and extract element 13 which will be the highest value.

/* The item which holds that highest value will then
/* be tested for and the appropriate code written to the
/* HIGHEST attribute.
/* HIGHEST changed to AERO-LU    **PB 1/00

&do &while %:edit.AML$NEXT%

  &s high = [extract 13 [sort %:edit.AG% %:edit.RNG% %:edit.URB%~
              %:edit.AGG% %:edit.BARG% %:edit.DECIDG%~
              %:edit.EVGRG% %:edit.MIXG% %:edit.RKG%~
              %:edit.RNGG% %:edit.URBG% %:edit.WATG%~
              %:edit.WETG% -numeric]]

  &select %high%
  &when %:edit.AG%
    &s :edit.AERO-LU = 2

  &when %:edit.RNG%
    &s :edit.AERO-LU = 3

  &when %:edit.URB%
    &s :edit.AERO-LU = 1

  &when %:edit.AGG%
    &s :edit.AERO-LU = 2

  &when %:edit.BARG%
    &s :edit.AERO-LU = 8

  &when %:edit.DECIDG%
    &s :edit.AERO-LU = 4

  &when %:edit.EVGRG%
    &s :edit.AERO-LU = 5

  &when %:edit.MIXG%
    &s :edit.AERO-LU = 6

```

```

&when %:edit.RKYG%
  &s :edit.AERO-LU = 11

&when %:edit.RNGG%
  &s :edit.AERO-LU = 3

&when %:edit.URBG%
  &s :edit.AERO-LU = 1

&when %:edit.WATG%
  &s :edit.AERO-LU = 7

&when %:edit.WETG%
  &s :edit.AERO-LU = 9
&end

cursor edit next
&end

cursor edit close
quit
&echo &off
&return

```

CALCLU3.AML

```

/*=====
=====DISCLAIMER=====
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/*create derivative works of this AML for your own internal use. All
/*rights not specifically granted herein are reserved to ESRI.
*/
/*THIS AML IS PROVIDED "AS-IS" WITHOUT WARRANTY OF ANY KIND, EITHER
/*EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED
/*WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE,
/*WITH RESPECT TO THE AML.
/*
/*ESRI shall not be liable for any damages under any theory of law
/*related to your use of this AML, even if ESRI is advised of the
/*possibilities of such damage. This AML is not supported by ESRI.
***** 
/* This AML processes a coverage called LANDUSE so
/* The 4 references to LANDUSE need to be changed to
/* the appropriate coverage.

/* An item called HIGHEST has been added to the PAT to
/* hold the landuse type which is the largest for that cell.
/** HIGHEST will be changed to AERO-LU ** PB 1/2000
/** Coverage LANDUSE will be changed to AERO_LU_COV ** PB 1/00
/*=====
/*
/* calclu3.aml
/* Edited and adapted from calclu2.aml by P. Barickman
/* 11/2000
/*
/* Designed to put a land use uam-aero based land use classification

```

```

/* into each grid cell in the domain.
/*
/* This is run again on the land use classes on a domain of 4 km cells.
/* The preprocessing to arrive at this step is documented in notes2.sdw.
/***********************
/*Below are the land use categories being attributed
/*with this aml
/*
/* 1 = urban
/* 2 = agriculture
/* 3 = range
/* 4 = deciduous
/* 5 = conifer
/* 6 = mixed forest
/* 7 = water
/* 8 = barren
/* 9 = non forest wetland
/* 10 = mixed ag & range
/* 11 = rocky (low shrub)
/***********************
&echo &on
&if [exists aero_lu_4km -cover] &then
    kill aero_lu_4km all
copy lu4km12 aero_lu_4km
    ***** add the land use item
additem aero_lu_4km.pat aero_lu_4km.pat aero-lu 2 2 i
/*
ap
clearsel
/*
/* Recalculate the AG and Urb items to insure that
/* the AGR/QGET landuse takes precedence over the USGS landuse.
/* The point of the following recalculation is that if a cell has
/* predominantly urban or agricultural character, the classification
/* from usgs should not be allowed to override the class from agrc if
/* it turns out to have a larger sq meters of area.
/* For a cell in which neither of these classes dominate, a simple
/* recalculation of of ag or urb should not change its final
characterization.
/*
/* agriculture

resel aero_lu_4km poly ag > urb
resel aero_lu_4km poly urbg > ag
calc aero_lu_4km poly ag = urbg + 10
clearsel
/*
/* urban

resel aero_lu_4km poly urb > ag
resel aero_lu_4km poly agg > urb
calc aero_lu_4km poly urb = agg + 10
clearsel
/*
***** Use CURSORS *****
reselect aero_lu_4km polygon area > 0

```

```

cursor edit declare aero_lu_4km poly rw
cursor edit open

/* Sort all of the item values for each record,
/* and extract element 13 which will be the highest value.

/* The item which holds that highest value will then
/* be tested for and the appropriate code written to the
/* HIGHEST attribute.
/* HIGHEST changed to AERO-LU    **PB 1/00

&do &while %:edit.AML$NEXT%

  &s high = [extract 13 [sort %:edit.AG% %:edit.RNG% %:edit.URB%~
               %:edit.AGG% %:edit.BARG% %:edit.DECIDG%~
               %:edit.EVGRG% %:edit.MIXG% %:edit.RKYG%~
               %:edit.RNGG% %:edit.URBG% %:edit.WATG%~
               %:edit.WETG% -numeric]]

  &select %high%
  &when %:edit.AG%
    &s :edit.AERO-LU = 2

  &when %:edit.RNG%
    &s :edit.AERO-LU = 3

  &when %:edit.URB%
    &s :edit.AERO-LU = 1

  &when %:edit.AGG%
    &s :edit.AERO-LU = 2

  &when %:edit.BARG%
    &s :edit.AERO-LU = 8

  &when %:edit.DECIDG%
    &s :edit.AERO-LU = 4

  &when %:edit.EVGRG%
    &s :edit.AERO-LU = 5

  &when %:edit.MIXG%
    &s :edit.AERO-LU = 6

  &when %:edit.RKYG%
    &s :edit.AERO-LU = 11

  &when %:edit.RNGG%
    &s :edit.AERO-LU = 3

  &when %:edit.URBG%
    &s :edit.AERO-LU = 1

  &when %:edit.WATG%
    &s :edit.AERO-LU = 7

  &when %:edit.WETG%

```

```
&s :edit.AERO-LU = 9
&end

cursor edit next
&end

cursor edit close
quit
&echo &off
&return
```